REMARKS

In the Office Action of April 16, 2003, Claims 1 - 3 and 10 - 16 were rejected. No claim was allowed. In response, Claims 1 - 3 and 10 are canceled and new Claims 17 - 19 are added to the application. Reexamination and reconsideration are respectfully requested in view of the foregoing amendments and the following remarks.

Support for new Claims 17 - 19

Claim 17 is supported by the description on page 18, lines 7 - 10 of the specification.

Claim 18 is supported by the description on page 18, lines 11 - 19 of the specification.

Claim 19 is supported by the description on page 18, lines 22 - 24 of the specification.

Accordingly, it is respectfully submitted that new Claims 17 - 19 do not contain new matter.

Objection to the Amendment to the Specification

The Examiner objected to the amendment filed on January 27, 2003 and the amendment filed on September 20, 2002 on the alleged grounds that the changes to the specification introduce new matter. In response, Applicants cancel the amended matter. A copy of the original version of the portions of the specification that were amended is attached hereto.

Rejection of Claims 1 - 3 and 10 under 35 U.S.C. §103(a) over Dershem in view of Namba et al or JP Nos. 61-291615 and Sachdev

Claims 1 - 3 and 10 were rejected under 35 U.S.C. §103(a) as obvious over Dershem (U.S. Patent No. 5,969,036) in view of Namba (U.S. Patent No. 4,764,571), JP 61-291615 and Sachdev et al (U.S. Patent No. 5,955,543). This rejection is moot because of the cancellation of Claims 1 - 3 and 10.

Rejection of Claims 1 - 3 and 10 - 16 under 35 U.S.C. §103(a) over Sachdev et al, Gaku et al, Gardner, Shimp and JP 63-66219 in view of Namba et al or JP Nos. 61-291615, JP-2-214714 and Dershem

Claims 1 - 3 and 10 - 16 were rejected under 35 U.S.C. §103(a) as obvious over Sachdev et al, Gaku (U.S. Patent No. 4,904,760), Gardner et al (U.S. Patent No. 4,918,157, Shimp (U.S. Patent No. 4,709,008) and JP-63-66219 in view of Namba (U.S. Patent No. 4,764,571), JP 61-291615, JP-2-214714 and Dershem et al (U.S. Patent No. 5,969,036). The Examiner alleged that Sachdev discloses a composition comprising an aryl dicyanate prepolymer such as Arocy L10 in admixture with an epoxy resin, benzyl dimethyl amine and copper acetylacetonate and discloses that the use of the aryl dicyanate wherein from 5-20% of the cyanate ester is converted to a prepolymer is preferred and is exemplified by species including the Arocy L10, XU 71787 and Arocy F10.

The Examiner alleges that Gaku discloses a prepreg or formulation for electrical parts prepared from a polycyanate ester prepolymer, an epoxy resin, less than 10 weight percent of a catalyst such as an imidazole or an organometallic salt and a variety of additives). The Examiner alleges that Gardner is directed to an impregnating or encapsulating resin obtained from SD parts by weight of Cyanate

Ester A prepolymer, 2D parts by weight of an epoxidized novolac resin, a urea compound catalyst and modifying components such as stabilizers. The Examiner alleges that Shimp is drawn to a printed wiring board or encapsulant formulated from a blend of tricyanate and dicyanate esters as prepolymers which facilitates its use as a prepreg, up to 70 weight percent of a polyepoxide, from about 0.001 to about 20 parts by weight of the cyanate ester blend of an organometallic curing catalyst, and additional components. The Examiner alleges that Japanese '219 describes a prepreg or semiconductor sealant comprising a polycyanate prepolymer and a polyepoxide.

The Examiner acknowledges that the claimed dicyclopentadiene-phenol epoxy resin of formula (1) is not disclosed in the references. The Examiner takes the position that it would have been obvious to employ the dicyclopentadiene-phenol epoxy resin of Namba et al. and the Japanese patents as the polyepoxide of Sachdev et al., Gaku et al., Gardner et al., Shimp and Japanese '219 in order to lower the residual stress after resin curing and improve the heat resistance and flexibility (Namba et al., col. 1, lines 21-47), enhance the moisture resistance and internal plasticity (Japanese '615), and provide excellent through-hole reliability and high-frequency property (Japanese '741).

The Examiner acknowledges that the claimed curing accelerator of a catalyst for curing the cyanate prepolymer (C)(i) and a curing accelerator for the epoxy resin (ii) is not disclosed in the references. The Examiner takes the position that It would have been obvious to utilize a combination of a metal catalyst and imidazole curing catalyst of Dershem as the curing catalysts for Sachdev et al., Gaku et al., Gardner et al., Shimp and Japanese '219 in order to optimize the cure of both the cyanate ester and epoxy resin.

The Examiner acknowledges that the claimed antioxidant is not recited. The Examiner takes the position that it would have been obvious to incorporate the antioxidant of Dershem as an additive to Sachdev et al, Gaku et al , Gardner et al Shimp and Japanese '219 in order to improve the thermal stability.

This rejection is respectfully traversed. The prepreg of claims 11-19 is characterized by containing as the component (B) the epoxy resin of the formula (1) together with the antioxidant (component (D)). By using the antioxidant, insulating characteristics are improved (page 19 lines 4-8 of the present specification) and galvanic corrosion (in other words, metallic migration, in this case, copper migration; see page 3 lines 22-28 of the present specification) resistance is also improved.

Such special effects are not disclosed nor taught by all of the cited references as explained below.

In Sachdev, the resin composition is used for an adhesive, not for a prepreg (column 1 lines 9-13), and the use of the antioxidant and the epoxy resin of the formula (1) is not described nor suggested.

In Gaku, Gardner, Shimp, JP-A 63-66219, JP-A 61-291615 and JP-A 2-214714, the use of resin compositions as a prepreg is disclosed, but the use of the antioxidant is not disclosed or suggested.

In Namba, JP-A 61-291615 and JP-A 2-214714, the use of the epoxy resin of the formula (1) is disclosed, (Namba does not disclose a prepreg), but the use of the antioxidant is not disclosed nor suggested.

Among the cited references, only Dershem discloses an antioxidant. But, Dersham relates to an adhesive composition, and not to a prepreg, and Dershem does not disclose the epoxy resin of formula (1). In the adhesive composition of Dershem, the antioxidant is used for improving the thermo-oxidative stability of a

high temperature polymer (col. 9, lines 7 - 30). It appears that the primary reason for adding the antioxidant to the adhesive composition of Dershem is to counteract the oxidizing effects of silver metal powder that is added as a filler to the composition. Therefore, there is nothing in Dershem that would suggest to a person skilled in the art to include an antioxidant in the compositions of the other cited references.

Accordingly, it is respectfully submitted that Claims 11 - 16 and new Claims 17 - 19 would not have been obvious over Sachdev, Gaku, Gardner, Shimp, JP-63-66219, Namba, JP 61-291615, JP-2-214714 and Dershem alone or in combination.

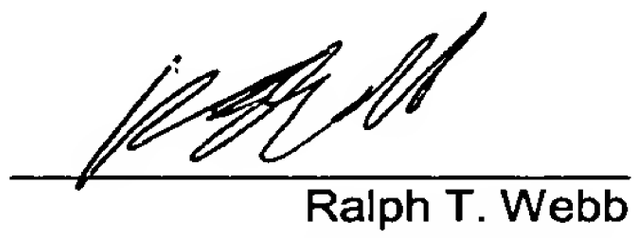
Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 11 - 16 and new Claims 17 - 19 are in condition for allowance. Favorable reconsideration is respectfully requested.

Should the Examiner believe that anything further is necessary to place this application in condition for allowance, the Examiner is requested to contact applicants' undersigned attorney at the telephone number listed below.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 01-2135 (500.40168X00).

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS



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Original version of paragraphs of the specification restored by the cancellation of previous amendments herein

IN THE SPECIFICATION:

The following is the original version of the paragraph beginning on page 24, line 21:

A cyanate-epoxy resin composition varnish was prepared in the same way as in Example 1 except that a bis (3,5-dimethyl-4-cyanatephenyl)methane prepolymer (Arocy M-30, trade name, produced by Asahi Ciba Ltd.; monomer reaction rate: about 46%; number-average molecular weight: 490; cyanate equivalent: 219) was used as the cyanate type compound (A) containing two or more cyanato groups in one molecule in place of the 2,2-bis (4-cyanatephenyl)propopane prepolymer, and it was dissolved in methyl ethyl ketone in the ratio shown in Table 1, and that zinc naphthenate was used in place of cobalt naphthenate and 2-ethyl-4-methylimidazole was used in place of 2-methylimidazole, they being blended in the ratios shown in Table 1.

The following is the original version of the paragraph beginning on page 25, line 17:

A cyanate-epoxy resin composition varnish was prepared in the same way as in Example 1 except that zinc naphthenae was used in place of cobalt naphthenate and 2-undecylimidazole (C11Z, trade name, produced by Shikoku Chemicals Corp.) was used in place of 2-methylimidazole (2MZ) and blended in the ratios shown in Table 1.

Table 2

			Example				Comp. Example				
			5	6	7	8	6	7	8	9	10
Formulation	Cyanate ester resin	ArocyB-30	100	-	100	100	100	100	100	-	100
		ArocyM-30	-	100	-	-	-	-	-	-	-
	Epoxy resin	DER331L	-	-	-	-	65	90	-	-	-
		HP7200H	95	70	95	95	-	-	-	-	95
		ESB400T	55	50	55	55	55	-	-	100	55
	Curing agent	HP850N	-	-	-	-	-	-	-	26	-
	Curing accelerater	Cobalt naphthenate	0.5	-	-	-	0.5	0.5	-	-	-
		Zinc naphthenate	-	0.5	-	0.5	-	-	0.5	-	0.5
		Manganese naphthenate	-	-	0.5	-	-	-	-	-	-
		2MZ	1	-	-	-	1	1	-	1	-
		2E4MZ	-	1	-	-	-	-	-	-	-
		C11Z	-	-	1	-	-	-	-	-	-
		2MZ-CNS	-	-	-	1	-	-	-	-	-
	Antioxidant	Pyrogallol	5	-	5	5	-	-	-	-	5
		Phenolic compound *1	-	5	-	-	-	-	-	5	-
Evaluation results		Specific dielectric constant (1MHz)	3.8	3.6	3.8	3.7	3.8	4.1	3.7	3.8	4.5
		Glass transition temperature (℃)	190	200	195	195	190	170	230	130	180
		Solder heat resistance	○	○	○	○	○	○	×	○	○
		Water absorption (%)	0.4	0.4	0.4	0.4	0.4	0.7	0.7	0.6	0.6
		Time elapsed till conduction break occurred (h)	>500	>500	>500	>500	280	280	290	>500	>500
		Flame retardancy (UL-94)	V-0	V-0	V-0	V-0	V-0	V-1	V-1	V-0	V-0

Formulation unit is part by weight.
*1: 4,4-thiobis-(3-methyl-6-t-butylphenol)